

WHAT IS CLAIMED IS:

1. An electronic package, comprising:
a substrate having a first surface;
an electronic device mounted on the first surface of the substrate; and
a heat spreader with two parallel channels disposed on the first surface of the substrate, each channel being attached along one edge of the substrate.
2. The electronic package of claim 1, wherein the device is substantially a rectangle that has two long edges and two short edges and the substrate is substantially a square that has four edges of equal dimension, and the device is mounted in the central region of the first surface of the substrate such that the two long edges are substantially parallel to two opposite edges of the four edges of the substrate and the two channels of the heat spreader are attached to the two opposite edges of the substrate parallel to the two long edges of the device.
3. The electronic package of claim 1 wherein the substrate is made of a material whose coefficient of thermal expansion is about 17 PPM/°C.
4. The electronic package of claim 1 wherein the heat spreader is attached to the substrate in a high temperature environment.
5. The electronic package of claim 4 wherein the high temperature environment is about 220°C.
6. The electronic package of claim 1 wherein the heat spreader is attached to the substrate by an adhesive material.
7. The electronic package of claim 6 wherein the adhesive material is epoxy.
8. The electronic package of claim 1 wherein package warpage is within the limit of a specification.
9. The electronic package of claim 1 wherein the heat spreader is made of metal.
10. The electronic package of claim 1 wherein the heat spreader is made of copper.

11. The electronic package of claim 1 wherein the heat spreader is made of materials with coefficient of thermal expansion similar to that of copper.
12. The electronic package of claim 1 wherein the thickness of each channel is about 0.6 mm.
13. The electronic package of claim 1 wherein the side width of each channel of the heat spreader is about 2 mm.
14. The electronic package of claim 1 wherein the length of the heat spreader is about the same as the length of the substrate.
15. The electronic package of claim 1 wherein the dimensional difference between the electronic device and the substrate in at least one direction is smaller than 7 mm.
16. The electronic package of claim 1 wherein the electronic device is a semiconductor integrated circuit.
17. A method for packaging an electronic device, comprising:
mounting the electronic device on a first side of a substrate; and
mounting a heat spreader on the first side of the substrate covering the electronic device, the heat spreader including two parallel channels, wherein the heat spreader is mounted by attaching each channel along one edge of the substrate.
18. The method of claim 17, wherein the device is substantially a rectangle that has two long edges and two short edges and the substrate is substantially a square that has four edges of equal dimension, and the device is mounted in the central region of the first surface of the substrate such that the two long edges are substantially parallel to two opposite edges of the four edges of the substrate and the two parallel channels of the heat spreader are attached to the two opposite edges of the substrate parallel to the two long edges of the device.
19. The method of claim 17 wherein the heat spreader is attached to the substrate through an adhesive material in a high temperature environment.

20. The method of claim 19 wherein the adhesive material is epoxy, the high temperature environment is about 220°C, and the heat spreader is made of a material with a coefficient of thermal expansion similar to that of copper.
21. The method of claim 17 wherein the thickness of each channel is about 0.6 mm, the side width of each channel of the heat spreader is about 2 mm, and the length of the heat spreader is about the same as the length of the substrate.
22. A semiconductor package, comprising:
a substrate;
a semiconductor device mounted on a first side of the substrate through a plurality of solder joints; and
a heat spreader mounted on the first side of the substrate covering the semiconductor device, the heat spreader having two parallel channels and each channel being attached along one side of the substrate.
23. The semiconductor package of claim 22, wherein the device is substantially a rectangle that has two long edges and two short edges and the substrate is substantially a square that has four edges of equal dimension, the device is mounted in the central region of the first surface of the substrate such that the two long edges are substantially parallel to two opposite edges of the four edges of the substrate and the two channels of the heat spreader are attached to the two opposite edges of the substrate parallel to the two long edges of the device.
24. The package of claim 22 wherein the heat spreader is attached to the substrate through an adhesive material in a high temperature environment.
25. The package of claim 24 wherein the adhesive material is epoxy, the high temperature environment is about 220°C, and the heat spreader is made of a material with a coefficient of thermal expansion similar to that of copper.
26. The package of claim 22 wherein the thickness of each channel is about 0.6 mm, the side width of each channel of the heat spreader is about 2 mm, and the length of the heat spreader is about the same as the length of the substrate.